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ABSTRACT

A study was designed to identify models of industry-based training (short-term training designed to upgrade or update the skills of employed workers). Information was gathered through a review of literature and 13 telephone interviews in 4 states with persons previously involved in outreach programs to business and industry. Researchers also attended seminars and meetings on customized training. The study identified the following eight models of industry-based training: (1) competency need; (2) diagnostic or medical; (3) democratic; (4) individual appraisal; (5) system discrepancy; (6) analytic; (7) self-fulfillment; and (8) performance discrepancy. The study also found two key parameters to the models: the different occupational skill levels at which training can be targeted and the administration of such training. As a result of the study, criteria were developed to evaluate the models of industry-based training. Finally, procedures were developed for identifying appropriate models for use in the Minnesota system of technical institutes. Appendixes include the interview protocol and a list of persons interviewed. (KC)

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by

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June 1988

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CHAPTER I

INTRODUCTION TO THE STUDY

> Business and industry training of employees (by vocational education) is a major contribution to our nation's productivity. We have some obligations toward that enterprise...We need to give more attention to opening our expertise and our facilities to contract training so that we can leverage resources on both sides (Buzzell, 1987).

In recent years, vocational and technical education programs have moved rapidly toward extending non-traditional training opportunities to business and industry. In many cases, the need to fill classes drives this movement as programs lose traditional students because of the changing demographics. In other cases, economic development goals motivate such activities. In still other cases, a sense of mission propels vocational and technical programs toward providing training for industry.

Guilinger (1987) argued that many postsecondary vocational and technical institutions can provide expert assistance in retraining current employees. The decline in the size of the total student population, he concluded, makes faculty and facilities available to provide training programs for business and industry. Echoing a similar sentiment from a local perspective, John Kobe, marketing director for Hennepin Technical Institute, observed that traditional enrollment has significantly decreased. He asserted that as a matter of survival, the mission of the technical institute must change. Kobe stated that "if students are not coming to them--they must go to the students" (personal communication, January 28, 1987).

These students can be found in the workplace because businesses want training for their employees. In the United States, it has been estimated that U.S. organizations with 50 or more employees provided formal training for 36.5 million people in 1986: that is 31% of the civilian labor force (Gordon, 1986). Companies use outside consultants/vendors along with their staff for 39 percent of technical and supervisory training, and 45 percent of management training. Outside vendors, including postsecondary institutions, are often used to supplement in-house training activities. Table 1 summarizes the reported use of internal and external resources to provide training for employed workers.

Table 1

Sources of Training for Business and Industry*

	% of Training Provided by In-house Staff	% of Training Provided by Outside Vendors	% of Training Provided by Both
Sales people	62%	6%	31%
1st line supervisors	60%	9%	30%
Production workers	27%	5%	68%
Customer service	45%	6%	49%
Office/clerical	51%	10%	39%

*Companies with 50 or more employees.

Recent reports highlight the potential contributions of such business-education partnerships, particularly to smaller business enterprises. Hollenbeck and Stevens (1987) concluded that training and retraining of employees through vocational institutes and community colleges was of particular benefit to smaller business employers who lack in-house training staff. Lloyd (1987) observed that no jobs have remained immune to fundamental changes which have altered the nature of the U.S. economy. He noted that the generally accepted approach to improving productivity is to use technology in the form of new equipment, machinery, and procedures. This trend suggests that training will need to be directed toward currently employed individuals. Yet, he concluded, job training is a function that most companies are not in a position to deliver. Lloyd cited a recent survey in Georgia which found that skilled employees will require retraining at least every three to five years just to keep pace with new technological applications. Lloyd also concluded that while most large companies were in a position to conduct their own retraining, smaller firms or new businesses were less likely to be able to do so, thus creating an obstacle to their survival.

Locally, small firms are the prime market for business-educational partnerships. In a recent study of over 48,000 small businesses in the Minneapolis-St. Paul area, Reynolds (personal communication, May 21, 1987) found that nearly 95 percent of businesses employed fewer than 50 people (see Table 2). Given the results of the Reynolds and Lloyd studies, it is reasonable to conclude that many firms in the Minneapolis-St. Paul area would not be in a position to retrain their currently employed workers.

Table 2

Business Comparison by Number of Employees

Number of Employees	Number of Companies
1 - 19	41,400
20 - 49	4,000
50 - 99	1,500
100 - 249	890
250 - 499	255
500 - 999	98
1,000 - 9,999	80
10,000+	2

According to "The National Alliance of Business Report on Employment Policy: Looking to the Year 2000," another changing dynamic of the labor market is the nation's aging work force... "90% of those who will be working in 1990 and 75% of those who will be working in the year 2000 are already in the work force." (Cited in the Minnesota State Board of Vocational Technical Education, 1986). Companies are finding it harder to recruit from the dwindling ranks of young people. The result, as Paulter and Schiavone (1987) noted, is that companies need to retrain their current work force.

Businesses recognize that training to upgrade and update employed workers leads to increased productivity and quality. This is a position which has long been recommended by quality and productivity experts (Crosby, 1979). Deming (1985) strongly advocated training of employed workers as part of his fourteen step model to improve the overall quality and productivity of a company. He specifically argued for instituting training on the job and vigorous programs for individual education and self-improvement.

Retraining of employed workers has often been discussed under the rubric of economic development. Sorensen (1986) stated that economic development is moving from "smokestack chasing" and small business technical assistance to a total process for creating new wealth, new jobs, and a new tax base for a community. He concluded that with this change toward economic development, the role of vocational and technical education must change as well. In the evolution of the technical institutes' mission statement, he argued for the inclusion of continuing education courses. These courses would provide employees with the opportunity to upgrade skills and maintain occupational currency in the changing work environment while providing customized training programs to meet specific needs of a business or industry.

Rationale for Industry Based Training

There are multiple perspectives on the need for training in the workplace that provide compelling arguments for decision makers in the postsecondary vocational and technical education (TI) system to seriously examine their system's role in the delivery of training to employed workers. From the perspective of a TI system, two specific conditions exist which promote opportunities to furnish or expand industry based training (IBT). First, the TI system has the expertise to provide needed training. Second, the expertise is becoming more available as traditional student populations continue to decline. Staff and facilities will be more readily available to supply training.

The opportunities in developing IBT which are created by these conditions suggest potential benefits for the TIs. The first benefit is greater utilization of staff and facilities. A tangential benefit that flows from this is that the increased contact with business and industry by the instructional staff will benefit students enrolled in the traditional programs by enhancing the currency of the instructors' knowledge. The second benefit is that establishing or strengthening the relationship between technical institutes and business and industry can contribute to increased productivity and local economic development.

Benefits to Business and Industry

For businesses using training provided by technical institutes, there may be differential benefits dependent on the size of the firm. While all types of firms may benefit from an active partnership with local TIs, there is evidence that smaller companies, which typically do not have formal in-house training programs or personnel, need the TIs capabilities more than the self-sufficient, larger firms. Technical institutes can perform as surrogate training departments for smaller firms. In other instances IBT can "cushion" the budgets of firms for other types of training (Geber, 1987).

Technical institutes can also provide needed services for larger businesses as well. The Rhode Island Community College responded to a need perceived by a state economic development committee for on-site customized training (Listen & Ward, 1984). Based on an analysis of the training needs of the Metropolitan Life Insurance Company and the Puritan Life Insurance Company, the community college system designed and offered a series of programs in business writing, accounting, and applied business psychology for company employees. And, responding to the needs of the prospective students, the programs were offered for college credit.

Business and industry also recognize the cost savings offered by vocational and technical education programs. Postsecondary institutes are approached to conduct short term, industry specific training because they are in a position to offer training at a much lower cost than other training resources. Often, because they are non-profit, TIs can charge one-half to one-fifth less than other vendors. The actual cost per learning hour for adult education conducted through public education can be as low as $2.00; while private businesses charge, on the average, $38.00 per hour of instruction (Lynch, 1983). A medium size retail firm (45 retail units) on the east coast discovered the possible savings when it conducted a cost-benefit analysis of creating a training department for the firm. The firm found it was more cost effective to use local community colleges and outside vendors as their training providers (Reece, personal communication, December 1986). Geber (1987) reported similar costs savings by General Motors at their Michigan Fiero plant that led to their use of a local TI for employee retraining.

In addition to the cost savings TIs can provide, other benefits include the expertise of the TI staff and the flexibility of program development. A major selling point for a TI system according to D. Flowers (personal communication, December 5, 1986) is that these institutes have a good deal of experience in training and in program development.

Benefits to the State

There are economic advantages for a state that supports vocational and technical schools in providing training for employed workers since businesses are more likely to expand in a state where training is available. As Guilinger (1986) noted, "As has become abundantly clear, a well-trained work force is one of the strongest incentives for industry to locate and expand in any given state. Vocational Education provides that skilled work force." (p. 1). Given the need for upgrading and updating the skills of employed workers, particularly as the economy moves from a manufacturing based economy to a service and technology based economy, businesses are more likely to locate or expand production close to a source of well-trained workers (Geber, 1987).

The development and delivery of short-term, industry based training for employed workers has the potential to be a classic win-win situation. The technical institutes benefit because staff and facilities are more fully utilized; businesses benefit because they can receive competent training for employees on a cost-effective basis; and local and state governments benefit because of increased economic activity resulting from a more highly skilled workforce.

Yet, given these benefits, little is known about the best way to approach industry based training. While the literature is full of "success stories," there is a dearth of information regarding the types of and planning parameters required for successful IBT programs.

Purpose of the Study

This study was designed to identify models of industry based training: short term training designed to upgrade or update the skills of employed workers. The model(s) identified through this effort will provide additional tools for directors, curriculum developers, and advisory committee members of Minnesota's postsecondary technical institutes (TI) as they seek ways to improve their relationship with business and industry.

Research Objectives

The objectives of this study were the following:

1. Identify models for the design and delivery of short-term, upgrading and updating training of employed workers.

2. Identify relevant parameters for IBT models related to administration, design, and delivery of programs.

3. Develop criteria to evaluate models of short term training.

4. Develop procedures to identify appropriate models for use in the Minnesota system of technical institutes.

CHAPTER 2

THE STUDY

This study originally focused on Minnesota's postsecondary technical institute based training programs for industry and later expanded to include other states' vocational and technical systems that offered alternative perspectives on the issues. Care was taken to select other states that were both similar to and different from Minnesota. The study was delimited in its scope to those programs focusing on the service sector. The rationale for this was twofold. First, in Minnesota, as in most states, the real net growth in employment has been largely in the service sector. Second, research on service sector training has largely been ignored in favor of trade and manufacturing oriented businesses.

This chapter will describe the procedures employed in the review of literature. Also described will be the procedures used to conduct the telephone interviews.

Procedures

The review of literature began with a review of reports, journal articles, and studies related to the focus of the study. It soon became apparent that there was little literature related to the objectives of this study. Only eight reports were found in the literature describing various types of service sector related IBT. As a consequence, a series of interviews were also conducted to provide additional information.

Based on the review of the literature, an interview protocol was developed. The questions were designed to elicit responses on the administration, design, and delivery of short term training for employed workers in business and industry as well as possible criteria for evaluating the success of these programs (see Appendix A).

Using the protocol developed for the study, thirteen telephone interviews were conducted in four states (see Appendix B). Individuals interviewed in each state were selected as a result of their previous involvement in outreach programs to business and industry. Virginia was selected because it has had a series of short term training programs designed specifically for the service sector since the mid-1970s. Project 1000 courses, as they are titled, were designed to be delivered by vocational educators to smaller businesses needing training in

sales, supervision, and human relations. Wisconsin was selected because it operates a postsecondary vocational-technical education system similar in structure to Minnesota's TI system. It also shares similar problems in economic development due to its geographic location. Oklahoma, a representative of the sunbelt states, has a reputation of success in the development of vocational education based training for business and industry. Finally, several individuals were interviewed in Minnesota who had been actively involved in providing short-term training for business and industry.

In addition to the review of the literature and interviews, the project staff also attended selected Minnesota State Board of Vocational and Technical Education committee meetings on customized training and a national conference on industry-specific training.

Findings

The review of literature and interviews yielded the following information relative to the objectives of the study.

Objective 1

The first objective was to identify models for the design and delivery of short term training to update and upgrade employed workers.

What was originally conceptualized as distinct models of training program design emerged as a continuum model. One end of this continuum is represented by training programs that are offered by technical institutes with little or no modification. These are referred to as "packaged programs" (Weiss, 1987) or "off-the-shelf" programs (Lloyd, 1987). Programs meeting this definition are frequently offered as businesses seeking assistance from postsecondary technical institutes are often guided into pre-existing, campus-based programs and course offerings.

The other end of the continuum is represented by programs that are "fully customized" (Scharlatt, 1983). These programs have extensive needs assessment activities on the part of the curricula developers, followed by the creation of an original program. The final product is uniquely suited to one organization with little transferability to other organizations. In between these two extremes are varying levels of modification of existing programs.

Although distinct models of IBT did not appear in the literature, two related factors appear to offer a means of conceptualizing different models along a continuum. These two

factors involve needs assessment behaviors and the degree of program development activity.

Needs Assessment Behavior

The first means of discrimination between models is through analysis of the degree and sophistication of needs assessment activities. Pennington (1980) recognized that businesses prefer short term, high intensity training. He identified eight types of needs assessments as the most frequently used approaches or models to develop such training. These eight models include the following:

1. Competency/need model: competencies required for successful completion of a task or job are identified through a variety of processes.

2. Diagnostic or Medical model: used to prescriptively examine a system and recommend an intervention.

3. Democratic model: input is solicited from prospective trainees on what they want in terms of training.

4. Individual appraisal model: a self-assessment process is conducted by prospective trainees.

5. System discrepancy model: gaps in system-wide performance standards are examined.

6. Analytic model: requires the use of external "experts" to analyze a system and recommend training.

7. Self-fulfillment model: suggests if a training class fills, it must be meeting needs.

8. Performance discrepancy model: similar to the system discrepancy model except that the performance of individuals is examined.

Few of the program descriptions found in the literature or provided in the interviews explicitly provided information on needs assessment behaviors, thus it was difficult to relate models of needs assessment to current IBT practice. One program, where needs assessment activities were described in some detail, was conducted by the Tennessee School System (Parnell and Yarrington, 1982). Here school personnel interviewed personnel in larger companies and conducted telephone interviews with small business people, which is an example illustrative of the competency/need model. The businesses included in the interviews were listed by the type of business, product or service, and services the school had provided for them in the past. A list of competencies/needs emerged from these contacts which were added

to requests made by adult students, advisory and craft committee members, instructors and staff. This list provided the basis for the development of their industry based training programs.

The interviews conducted provided little additional insight into needs assessment practices except to confirm the general lack of needs assessment behaviors on the part of IBT providers. Generally, needs assessments, if they were conducted, were conducted very informally. Flowers noted that they were only done when necessary and then by the instructors. This might occur in one-third of the programs (Personal communication, December 1986). Presley stated that when they are contacted for training, they usually ask the business contact person to describe the problem. Occasionally, a questionnaire may be used or company records may be accessed to provide data for program development. However, there was no systematic approach involved (Personal communication, December, 1986).

Lampe (1986), in his discussion of needs assessment, identified 16 types of information needs assessments can provide and five likely sources for primary input. Regarding job skills and performance, he defined a needs assessment (or front-end analysis) as ".... an effort to reveal the gaps between what people do at work and what their employers would like them to do." (p. 101). This is very similar to Pennington's (1980) performance discrepancy model. Lampe pointed out that many needs assessments are just perceived or felt needs. He argued that it is important to use pretests and other formal ability measures in order to eliminate subjectivity as much as possible. Regardless of how the information is obtained, Lampe identified the five sources of input on needs assessment as subject matter experts (SME), intended trainees, managers of trainees, former trainees, and clients/users. The type of information each can provide is shown in Table 3.

In the literature, little detail was provided on the nature of needs assessment behaviors on the part of schools providing IBT. What discussion did exist seemed to suggest that technical institutes responded primarily to business requests based on the businesses' perceived needs.

Program Development Behavior

The second factor useful in discriminating between models is the degree of actual program development activity. Some variations reflect only cosmetic changes to packaged or off-the-shelf programs. Others involve more extensive modification (Weiss, 1987). What separates the two ends of the continuum is the degree to which an existing program is modified to meet the needs of business and industry. Three levels of program development modification were identified from the literature.

Table 3

Primary Sources of Needs Assessment Data

Source	Input
Subject Matter Experts	-Scope -Central topics/Key issues -Theme -Procedures -Perceived importance of topics
Managers	-Most frequent requested tasks -Profit center concerns -Spheres of influence -Relationship to other training -Risks in not training
Intended Trainees	-Perceived levels of knowledge & ability -Learning preference
Former Trainees Performance	-Unique approaches to training -Core bits of knowledge
Clients and Users	-Product/Service -Expectations

For the purpose of this study, they have been labeled as follows: (a) Standardized, (b) Personalized, (c) Fully Customized.

Standardized Programs

The standardized program model is an off-the-shelf training program with little attempt at modification. Using this model, a TI would encourage business clientele to enroll in on-going courses or programs. This may entail offering a special section for the business's employees, or having the employees attend classes or sections of classes with other students. Examples of these programs typically include training in computer software programs and supervisory training programs.

There are two advantages to standardized programs. First, they are usually based on extensive research and curriculum development efforts. Second, they are ready for immediate delivery to clients.

There are, however, distinct disadvantages as well. Competitors will have access to the same programs, eliminating any comparative advantage for the business sending its employees to the training program. Secondly, there is seldom a standardized method for tracking results to find out how well the skills taught were used or retained. Finally, such programs do not provide a sense of ownership in the program by an individual firm (see Figure 1).

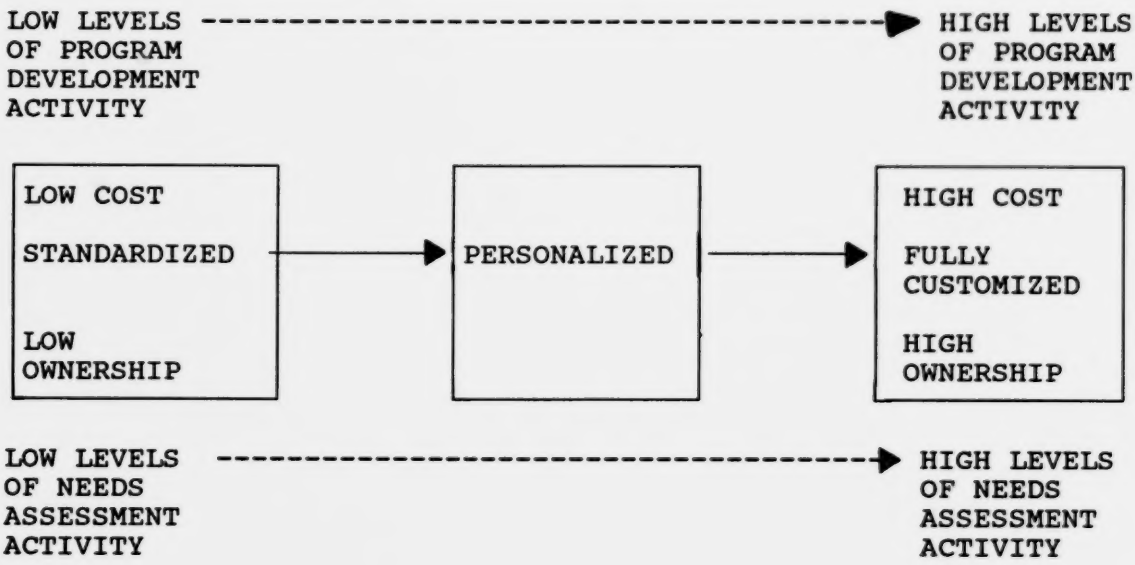

Figure 1. Continuum of program development activity

In the telephone interviews, two postsecondary school districts were found to rely heavily on the delivery of standardized programs to meet the needs of local business and industry. The Milwaukee Area Technical College (MATC) conducts approximately 30 percent of their programs using standardized training programs. For MATC, this model is most common in programs related to computer training (D. Grypp, personal communication, December 1986).

At Northeast Wisconsin Technical Institute (NWTI), standardized training programs are used for 65-80% of their outreach training. In these programs, they employ seven full time trainers and average 1100 in-house training programs

annually (D. Flowers, personal communication, December 18, 1986).

In addition to these institutionalized programs, the Project 1000 courses in sales, human relations, and supervisory training, originally developed for Virginia adult educators, have provided training to thousands of clients across the United States (Reece, personal communication, December, 1986). These programs are now available through a national curriculum consortium housed at Ohio State University. If numbers are a measure of success, then the delivery of standardized programs would seem to be meeting the needs of local businesses.

Personalized Programs

The personalized program model may be based on existing curriculum but has been substantially altered to fit the needs of a specific company. The most common element of the tailoring process is the reduction of the amount of "nice-to-know" content. A second element is that more company based material, such as company based histories, forms, equipment, are included in the program. These programs often rely on company specific role playing situations as well. The degree of tailoring in the development of personalized programs may be quite varied. Oklahoma's vocational education programs provide personalized training programs that focus on supervisory and management training. Topics include employee development, efficiency, productivity, values, long-term planning, and delegation. Their supervisory training consists of modules with various options and eight separate management training packages (L. Presley, personal communication, December, 1986).

The advantages of personalized training programs are twofold: (a) they build on a proven program instead of requiring extensive development activities, and (b) these programs provide for more client ownership of the training program.

There are also two distinct disadvantages. Because of the increase in up-front developmental work, there is an increase in cost of such programs. As a result of the increase in developmental work, timely delivery may also prove to be a problem.

Fully Customized Programs

There are few formal definitions of customized training. Many who discuss the subject infer that it is any type of training offered to meet the needs of a particular business, industry, or group of employed workers. Training programs under this definition have included such diverse topics as first aid and CPR, conversational Spanish, microcomputers, typing, shorthand, and digital electronics (Liston and Ward, 1984).

Others have used the phrase to describe programs designed to teach skills on specific machines, e.g. data entry on an IBM System 36 or to train "physically disabled" employees (Zaragoza and Huber, 1987). Others have sought to delimit the definition to more clearly separate customized training from other education-business relationships. Weiss (1987) defined customized training as, "a program created specifically for your (staff)." Bjorkquist (1986) defined customized training as, "a systematic problem analysis of organizational performance problems to determine the training needs of the potential audience, followed by the development, delivery, and evaluation of training systems to meet those needs." Note the heavy emphasis on front end analysis in the Bjorkquist definition. Lloyd (1987, p. 22) referred to customized training as "company specific...training courses that get to the point without unnecessary frills and (delivered) in a minimum of time."

The issue of definition is more than semantics. It suggests a framework for the identification of models of short term training for employed workers. The fully customized program model assumes a high degree of needs assessment activity and a final product designed especially for a particular firm. Aspects of existing programs may be used but are generally altered a great deal to meet the needs of a client. For the purpose of this study, customized training was envisioned as one end of the continuum of program development behavior (see Figure 1).

The principal advantage of a fully customized training program is that the unique needs of the client are better met. In addition, the process allows for maximum participation and ownership in program design by the client. Finally, there is the opportunity to incorporate information and technology that is considered state-of-the-art into the training program.

The trade-off for these advantages is that the cost for fully customized programs is much higher than the other models. There is also a manifest need for expertise in needs assessment skills; skills often lacking in TI staff.

Each model described above has potential value to business as well as to the sponsoring TI. The key, however, is for both business and the TIs to consider the trade-offs in terms of cost and the ability to meet specific company needs.

Objective 2

The second objective of this study was to identify relevant parameters for models related to administration, design and delivery of IBT.

In reviewing the efforts of vocational and technical education programs involved in IBT, several key parameters

emerged on two distinct dimensions. The first dimension dealt with the different occupational skill levels at which training can be targeted. These were identified as general skills, generic occupational skills, and job specific skills. The other dimension related to the administration of such training programs. (For a summary of the findings on these dimensions relative to the programs described in the literature and in the interviews, see Appendix C & D.) The parameters involved included sources of funding, location of the training program, the offering of college credit for participation, the nature of the promotional activities to recruit participants, instructors used for IBT, evaluation, and the status of businesses served (Parnell and Yarrington, 1982).

Occupational Skill Level

One of the dimensions to be considered in the analysis of short term training for employed workers is the skill level at which training is targeted. Three general levels were identified for this study.

General Skills

General skills are defined as basic to success in any employment situation. These would include what is traditionally thought of as basic skills, e.g. reading, computation, communication. These skills are considered prerequisites to successful participation in other levels of training.

Generic Occupational Skills

Generic occupational skills are defined as related to a general field of employment or to an industry. There are virtually unlimited generic occupational skills, but in the service sector a partial list might include the following: supervisory skills, human relations skills, sales skills, legal aspects of business ownership, etc. These types of skills would be transferable between firms in the same industry classification or similar occupations in different industry classifications.

Job Specific Skills

These are skills that are unique to a specific job classification. More commonly found in trade or technical based occupations or firms, examples might include specific welding techniques, management procedures unique to an organization, etc. These types of skills are not considered transferable to another job or industry cluster.

An initial analysis was conducted to match the level of occupational specificity with the program model, which most

closely approximated the descriptions provided for the programs by interviewees and reports. The results of this analysis suggest that standardized programs tend to focus on general skills and generic occupational skills; personalized programs were the most prolific and dealt with all three levels; and fully customized programs focused exclusively on job specific skills.

A useful way of conceptualizing these relationships is presented in Figure 2. The cells identified by an "X" or an "?"

	General	Generic	Specific
Customized	X	?	
Personalized			?
Standardized			X

Figure 2. Program matrix for industry based training

represent model relationships for which no support was found in the literature or in the interviews. Certain models, customized-general and standardized-specific, would logically not exist. These are noted with an "X". Using the same logic, certain models, customized-generic and personalized-specific, were identified by a "?" suggesting they most likely do not exist. Evidence supporting the models without notation was found in the literature and through the interviews. Most of the evidence found thus far would suggest that the majority of IBT programs would be classified personalized-generic or standardized-generic.

Administrative Parameters

Seven factors emerged relative to administrative parameters. These seven were (a) sources of funding, (b) location of the training, (c) offering of credit, (d) the type of communication activities employed to promote the programs, (e) the status of the businesses utilizing the services, (f) instructor characteristics, and (g) evaluation.

Funding

Various ways of funding training were discussed in the literature (Parnell and Yarrington, 1982). The four sources identified were company, state/government, school, or

individual. Combinations of these sources occur as well. Specific reports of state funding for IBT were found for Oklahoma, North Carolina, Missouri, Mississippi, and New York. However, Stevens (1986) reported that 44 states are to varying degrees offering financial support. Usually when state funding is involved, it is part of an economic development program, often supplemented with company contributions. Two examples of state funded programs were discussed by Parnell and Yarrington (1982). The first was developed for Sperry by Hinds College in Mississippi. The program was funded by the college and the state as part of the Mississippi Industrial Services Policy. After the college developed the courses, the company then paid the tuition cost for company employees who enrolled for college credit. The courses were taught by college faculty or the company's employees. In the latter case, the employee-instructors received part-time salaries from Hinds Junior College. The second program, involving governmental funding, was conducted by Schenectady County Community College in New York. This program allowed 52 Schenectady county employees to earn certificates for management training. Funding was provided by the United States Intergovernmental Personnel Act.

At a more local level, Hutchinson Technology Incorporated, along with several other companies in Hutchinson Minnesota with similar training needs, asked that a training coordinator be positioned at Hutchinson Technical Institute to oversee personalized training programs in 1987. This created a new position at Hutchinson Technical Institute. The first year salary was paid by the state, but funding for 1988 had not yet been determined--the companies using the services may be expected to pay for it (B. Coty, personal communication, February 16, 1987). In addition, from 1984 to 1985 Hutchinson Technology Inc. benefited from a state training grant funded through the Minnesota Job Skills Partnership for growing businesses or businesses with technical products.

It should be noted that where reimbursement is provided to employees who enroll in IBT programs/courses, limitations may be placed on receiving assistance; for example, the participant is required to receive a "B" or better for a grade (Parnell and Yarrington, 1982).

Another variation on the funding issue was reported by Geber (1987). She noted that many state vocational-technical education systems will purchase commercial packaged programs and teach them to a company's employees. This particularly benefits small companies that could not afford to purchase the commercial program.

Location

One of the variables in training design that is of particular interest to business is where the training will be conducted. Most schools will provide training where the company desires; often, this is on-site. The advantage to on-site training is in having the employees trained on the actual equipment they will operate on the job. In some cases, however, it is more economical for the company to send their employees to classes taught on campus. For each situation, cost/benefits, time constraints, and ease of training will need to be assessed in determining the best location for training.

Most of the training provided by those included in the interview was conducted in-house. Grypp stated that a majority of their IBT was conducted in-house. He also noted an interesting anomaly in that after they would offer a program in-house, many businesses found it to be more cost effective to send their employees to the MATC campus for the training (Personal communication, December 1986). Presley also noted that they conducted a majority of their training on-site (70%). These findings seemingly contradict a study reported in Training (1987: 108) that reported three of four responding organizations said they would conduct training away from their premises in 1987. The difference may be explained by the nature of the two samples. The interviewees dealt primarily with small businesses and the Training study focussed businesses with 50 or more employees and who were members of the American Society for Training and Development.

At Hennepin Technical Center, an alternative arrangement is used. The training is provided on campus while a faculty member is housed at the company to assist trainees in applying their newly-developed skills into the work context (Kobe, personal communication, January 28, 1987). The most important consideration for this arrangement is the TI's flexibility in meeting the business's needs. This flexibility may include the use of advanced delivery technology, such as satellite video courses, as an alternative method for the delivery of training (D. Grypp, personal communication, December, 1986).

Credit

Offering college credit for participation in training programs varies depending upon the nature of the institution providing the training. Oklahoma does not provide credit for courses (L. Presley, personal communication, December, 1986). However, Northeast Technical Institute in Wisconsin gives credit for some classes, e.g. supervisory training and microcomputer training (D. Flowers, personal communication, December, 1986). In the survey of literature, of the ten schools providing information on this issue, seven did provide some type of credit.

Promotion

An administrative function considered by many to be crucial to success in IBT is promotion. As Reece (personal communication, November 26, 1986) noted, teachers need to know how to market their programs. Marketing is important, he argued, because too often the people who <u>really</u> need the class are not in the class. Reece recommends a significant increase in marketing efforts. He suggests building alliances with government agencies responsible for economic development, Chambers of Commerce, secondary vocational directors, small business development administrators, etc.

Institutions involved in IBT often develop promotional strategies. Hennepin Technical Institute in Minneapolis has a "company of the month" recognition where a tour is given of the facilities and lunch is served for company representatives. This allows the school to present programs it offers as well as a professional atmosphere (J. Kobe, personal communication, January 28, 1987).

The state of Minnesota has developed a guidebook for marketing extension and customized training programs (Minnesota State Board of Vocational Technical Education, 1987). This represents one of the few systematic efforts at marketing found in the literature.

Business Status

The status of businesses was defined by whether they were new or expanding. Initial results of this study show that two institutions focused on expanding businesses, two schools concentrated on new businesses, and one school trained specifically for re-employment.

Instructor Characteristics

The selection of instructional staff is an important administrative consideration in the design and delivery of IBT. People in various jobs may act as an instructor. While faculty, used on a part-time basis, conduct the majority of training, company based trainers were also used. In some instances, the technical school acted as a broker to outside training consultants. TIs are often able to employ experts at a lower rate than business can. For example, Northeast Wisconsin Technical Institute has employed Tom Peters for $1,800 per day compared to his regular fee of $2,500. This represents a real opportunity for TIs, according to Dean Flowers, and they plan to market this brokering service more intensely in the future (Personal communication, December 18, 1986).

The Oklahoma State Department of Vocational Education makes extensive use of the broker process (L. Presley, personal communication, December, 1986); 90 percent of their instructors are outside consultants who have never taught in a traditional school setting. To ensure quality instruction, these consultants must participate in a 12 day train-the-trainer program provided by an outside consulting firm and are then awarded a three year certificate to teach in the IBT programs. They are required to continue taking in-service classes to maintain certification.

The use of vocational-technical education faculty as instructors also represents one of the areas of concern for providers of IBT. Reece noted that many instructors have little knowledge of how to teach adults (Personal communication, December 1986). As a result of this, individuals who wish to use the Project 1000 programs must undergo a two-day, intensive train-the-trainer program before they are allowed to use the materials. Grypp added that many instructors lacked the confidence in themselves to go into business to train and often preferred teaching in a regular school setting (Personal communication, December, 1986). This suggests that developing personnel to deliver IBT, particularly for those programs offered in-house, may require in-service training for TI faculty.

Evaluation

Evaluation is an aspect of IBT where most of those interviewed expressed a need for improvement. It is common belief among training and development professionals that evaluations are an all-too-often overlooked aspect of training. "Their (trainers) own future and the future of their programs depend to a large extent on their ability to evaluate and use evaluation results" (Kirkpatrick, 1976, p. 25). Part of the dilemma is that the meaning of evaluation, as well as the uses of evaluation data, need to be clarified. There is some agreement that evaluation needs to be more than simple subjective reaction sheets and that research designs measuring tangible results need to more fully utilized.

Hutchinson Vocational Technical Institute in Minnesota is typical of most training programs. They conduct learner evaluations at one point--immediately after the class (R. Balke, personal communication, February 18, 1987). Of the thirteen postsecondary institutes included in this study, one school solicited evaluation data from supervisors on their perceptions of the effectiveness of the training provided for their workers (D. Grypp, personal communication, December, 1986). A second school, NWTI in Green Bay, conducted a long term follow-up on a proofreading program delivered to secretaries and found the increase in skill level was maintained after one year (D. Flowers, personal communication, December 18, 1986). The other

schools in the study generally conducted traditional post-course student evaluations.

By combining the administrative and design considerations with the program matrix presented in Figure 2 and the continuum of program design activity presented in Figure 1, it is possible to conceptualize a decision matrix (see Figure 3). Such a decision matrix could be useful in planning for the design and delivery of industry based training. This matrix also provides a conceptualization of the various models of IBT to upgrade and update employed workers.

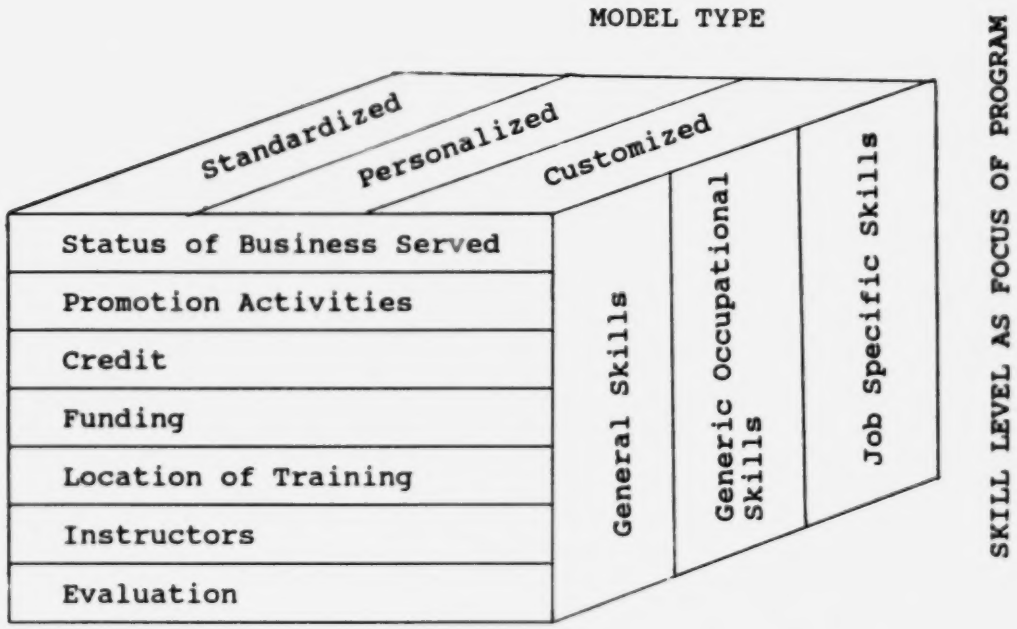

Figure 3. Matrix of models for industry based training

Objective 3

The third objective of this study was to develop criteria to evaluate the models of industry based training. The following is a tentative listing, followed by a brief discussion, of issues developed from the review of the literature and the interviews conducted for this study around which evaluation criteria need to be developed to assess the suitability of various configurations of IBT. The following is an initial list of criteria that

summarize the limited discussion in the literature and the perspectives of the interviewees.

1. Appropriateness of the model for the context

A major problem in the design and delivery of training is the misapplication of program model (i.e., providing an off-the-shelf program, which was unrelated to real needs). Possible evaluation criteria might address the degree to which program development was adequate to meet the needs of the business and the nature of the evidence needed to support conclusions.

2. Degree of pre-delivery needs assessment activities

The level of needs assessment activity will vary depending upon the type of IBT program envisioned for delivery. Criteria will need to be developed to provide guidelines for assessing the cost-benefit trade-off for the TI provider and the business client for the different configurations of IBT.

3. Evaluation methods employed

All training activities should be evaluated. Criteria should be developed to provide for multiple audience input into the assessment of the training. Further, criteria should be established to determine when it is appropriate to assess short and/or long range consequences of the training.

4. Degree of client participation in the design and content of IBT.

The degree of client involvement in the initial development of programming is an important consideration. The extent to which a TI should insist upon the participation of prospective clients in the design phase of IBT is an issue related to the type of IBT program delivered. Different types of IBT programs will require different criteria.

5. Qualifications of the program designer and deliverer

Two issues require attention. The first issue is the degree to which a TI should move beyond their known capacities (i.e. their current day school program base) to deliver training. Stated another way, to what extent should a TI attempt to design and deliver training for "professional" clientele groups? Criteria should be developed to provide guidance for IBT administrators.

The second issue relates to the appropriate background for the instructors used to deliver IBT. Criteria should be developed that address the optimum background or understanding

the individual should have in adult education and/or in the industry for which the training is being provided.

6. Accessibility

To be successful, IBT needs to be available when and where it most benefits the client. Criteria will need to be developed to address the appropriate degree of flexibility in scheduling and the most advantageous location(s) for the training.

7. Accountability

The up-front developmental work required in IBT often does not directly lead to immediate student enrollment. The traditional means of justifying personnel time in the Minnesota TI system is by counting enrollments, or average daily membership (ADMs). This would seem to inhibit aggressive IBT activities. Criteria need to be developed that allow for variation in this tradition that will free staff to perform the necessary up-front developmental work.

8. Selection of IBT Clients

A legitimate concern is identifying which local businesses or industries ought to benefit from tax-subsidized employee training. Should the focus be on existing businesses, new and emerging businesses, small rather than large businesses, or should the TI administrator pursue an eclectic, entrepreneurial approach to identifying targets of opportunity? This will become more of an issue as TIs become more successful in developing interest in IBT. Criteria need to be developed to provide direction for administrators.

Objective 4

This objective was to develop procedures for identifying appropriate models for use in the Minnesota system of technical institutes. It also addresses the development of recommendations for research to accomplish this end. This objective is discussed in the next chapter.

CHAPTER 3

DISCUSSION

This preliminary review of the literature and interviews with providers of industry based training suggest several conclusions. The first conclusion is that there is a lack of consensus on the use of the phrase "customized training." It is used to describe everything from individualized instruction for handicapped individuals to a diagnostic/medical needs assessment intervention process. Many postsecondary institutions nationwide are involved in working with industry to provide various types of related training and instruction and most consider what they do as "customized."

A second conclusion drawn is that there exists a need for the expertise available through a vocational-technical system. Opportunities abound for enterprising Minnesota Technical Institute staff who wish to pursue industry based training.

A third conclusion is that there do appear to be varying levels and types of programs offered to industry by postsecondary vocational-technical institutes and each would appear to offer benefits for both industry and the providers. At one end of the spectrum are standard programs having wide appeal and generalized application. Programs in computer related subjects, sales training, supervisory training, and technical training are often sought out by private sector firms. Technical institutes frequently are aggressive in selling these programs or slightly modified versions of them. As Dean Flowers observed, "(many firms) want training that is quick and dirty." In many instances, these programs are available only on regular campus sites. In other cases, they are offered on sites convenient to the location of the various businesses.

At the other end of the spectrum are fully customized programs. These require the services of someone skilled in the process of needs assessment and the design of training programs. Of the programs reviewed in this study, few Minnesota institutions were providing what we would define as fully customized training.

Between these two extremes are varying levels of tailored or personalized training programs. These programs offer clients varying degrees of specific company or specific job related training. The most frequently mentioned programs contain a condensed program where the "nice-to-know" content was removed.

In many cases, company materials or methods are incorporated into the training. The more client centered the method the more it appears to offer mutual benefits to both parties.

A fourth conclusion is that public technical institutes are in a favorable position to offer low cost training to the private sector. There is, conversely, a suspicion on the part of business and industry as to the quality of services being offered.

A fifth conclusion is that companies use outside vendors to a significant degree in training for office workers and supervisory staff, with customer service, sales, and production as the predominant content areas. Minnesota's TIs can use this information to target areas of training. A concurrent conclusion is that TIs are not approached to conduct executive development training.

Issues Related to the Design and Delivery of IBT

A number of actual or potential problems were identified which a TI system will need to resolve as they move to more business-education cooperation. These include the following:

1. Image of vocational education. Related issues include the problem of credibility, flexibility and the professional image of staff.

2. Appropriate marketing strategies. Attendant issues relate to targeting strategies for establishing alliances with government agencies, secondary vocational directors, small business groups, and Chambers of Commerce.

3. Need to evaluate and document accomplishments.

4. Need for experts to conduct needs assessments. The essential question is who would conduct the needs assessments and what type of credentials should that person(s) have.

5. Developing teachers' confidence in their ability to deliver industry based training. Related issues include the use of company based instructors and outside consultant/trainers and the proper training of IBT instructional staff.

As the Minnesota Technical Institute system increases the offering of services to business and industry, short term training focusing on upgrading and updating employed workers should play an important role. As businesses have varying needs, it would seem reasonable that each of the models identified could be used for mutual benefit. The key in selection of the model would be that the model's appropriateness is related to the context and situation in which it is to be implemented.

Future Research Directions

The next logical step in this investigation is to identify a list of planning factors which can be used in the development of industry based training programs and the generation of guidelines for how they can be operationalized. Such a list should be analyzed relative to each factor's value in the design and delivery of the different models of IBT designed to upgrade and update employed workers.

In the initial phase of research, relevant groups with an existing or potential interest in industry based training should be identified. Four groups are proposed:

1. Business persons who have previously used the services of Minnesota Technical Institutes.

2. Business persons who have not previously used the services of Minnesota Technical Institutes.

3. Administrators within the Technical Institute system who have not had experience in the design and delivery of industry based training.

4. Administrators within the Technical Institute system who have had experience with the design and delivery of industry based training.

The second phase of this investigation should be the identification of critical planning factors, analysis of how these factors can be operationalized, and the relative value of each factor in relation to the design and delivery of different types of industry based training. These data will lead to the development of a weighted planning model with design and delivery options. Such a model should prove useful to administrators in the Minnesota Technical Institutes as they consider expanding the system's role in the design and delivery of industry based training for updating and upgrading of employed workers in the service sector.

A third phase would focus on developing appropriate evaluation models for the different models identified. This phase would involve pre- and post-assessments conducted with participants, sponsoring employers, and individuals involved in the planning, design and delivery of these training programs. It is anticipated that on-site visits to selected localities and interviews would comprise much of the data for this phase of the study.

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APPENDIX A

Interview Protocol

1. Do you conduct any type of short-term training for employed workers in business and industry?

2. If yes, please describe the training you do. What is a typical example?

3. Is there any training model(s) you follow?

4. Would you say you offer standard, personalized, and/or customized training?

5. What level of skill specificity do you teach (e.g., general skills, general occupational skills, job/company specific)?

6. Who is the instructor (e.g., regular faculty (FT/PT), company's trainer, broker, other)?

7. Do you conduct an evaluation? Please describe.

8. Who funds the training (e.g., company, state, school, individual)?

9. Where is training conducted (e.g., in house, on-campus, other)?

10. Is credit given to trainees?

11. Is most of your out-reach training done as a result of marketing or as a result of companies approaching you for training?

12. Do you do any promoting? What kind (e.g., personal selling, seminars, brochures/letters, sales promotions, company of the month)?

13. What is the status of businesses you serve (e.g., new, expanding, non-specific, re-employment)?

APPENDIX B

Persons Interviewed

The following persons were interviewed during the development of this paper.

Rolly Balke, Hutchinson Vocational Technical Institute, Minnesota

Bruce Coty, Hutchinson Technology Incorporated, Minnesota

Dean Flowers, Northeast Wisconsin Technical Institute, Wisconsin

David Grypp, Milwaukee Area Technical College, Wisconsin

Robert Henderson, Department of Vocational and Technical Education, University of Minnesota

John Kobe, Hennepin Technical Centers, Minnesota

Leo Presely, Oklahoma State Department of Vocational and Technical Education, Oklahoma

Hallard Randell, Oklahoma State Department of Vocational and Technical Education, Oklahoma

Berry Reece, Vocational and Technical Education, Virginia Polytechnic Institute and State University, Virginia

Paul Reynolds, Department of Sociology, University of Minnesota, Minnesota

Janice Templin, Specialist AVTI Extension, State Board of Vocational Technical Education, Minnesota

William Wieser, Project Director of Customized Training Services State Board of Vocational Technical Education, Minnesota

APPENDIX C

A Summary of Design and Delivery Factors by State*

	MN	WI	WI	VA	OK	NC	MO	RI	FL	MS	NJ	NY	MN
	1	1	1	1			1	1		x			
Program	2	2	2	2	2	2	2	2		2		2	2
Type		3				3	3	3		3			
Skill Delivery	1	1			1			1	1		x		1
Level	2	2	2	2	2		2	2	2	2		2	2
		3				3		3		3			
	1	1		1					1				
Instructor	2		2	2	2		2	2	2	2	2	2	2
				3									
					4	4				4	4		4
	5			5	5								5
	1	1	1	1	x	x	x	x	x		x	1	
		2		2									
Evaluation		3											
		4	4										
	7									7			

* Table reflects multiple responses to specific factors

CODING

Program Type
1 = standardized
2 = personalized
3 = customized

Skill Delivery Level
1 = general skills
2 = general occupational skills
3 = job/company specific

Instructor
1 = college faculty ft
2 = college faculty pt
3 = H.S. teacher
4 = company's trainer
5 = broker

Evaluation
1 = participant-immediate
2 = participant-follow up
3 = supervisor-immediate
4 = supervisors-follow up
5 = long term w/participants
6 = long term w/supervisors
7 = yes; but specifics unknown

x = no information

APPENDIX D

A Summary of Administrative Factors by State*

	MN	WI	WI	VA	OK	NC	MO	RI	FL	MS	NJ	NY	MN
Funding	1	x	1	x	2 3	1 2	2	1 4	1	1 2 3 4	2	2	1
Location of Training	2	2	1 2	x	1 2 3	x	x	1	1	1	x	x	1 2
Credit	1	2	2	x	1	x	x	2	2	2	1 2	x	2
Promotion	4	2	1 2	1	1 3	x	x	x	x	x	x	x	1 2 3
Status of Business	3	3	3	3	1 2 3	1 2 3	4	3	3	3	3	3	3

* Table reflects multiple responses to specific factors

CODING

Funding
1 = company pays
2 = state pays
3 = school pays
4 = individual pays

Location
1 = on-site
2 = on campus
3 = other

Credit
1 = NO
2 = YES

Promotion
1 = personal selling
2 = seminars
3 = brochures/letters
4 = sales promotion

Status of Business
1 = expanding
2 = new
3 = non-specific
4 = re-employment

x = no information